

REMARKS/ARGUMENTS

Claims 27 and 30-37 are pending.

Claims 27, 28, 30, 31, 34, and 35 were rejected under 35 U.S.C. 103(a) for allegedly being unpatentable over Koning, U.S. Patent No. 6,365,973 in view of Lino et al., U.S. Patent No. 6,207,259.

Claims 32 and 36 were rejected under 35 U.S.C. 103(a) for allegedly being unpatentable over Koning, Lino et al., and Borenstein et al., U.S. Patent No. 5,178,685.

It is noted with appreciation that claims 29, 33, and 37 recited patentable subject matter.

Dependent claim 29 was deemed to recite allowable subject matter. Claim 29 depends from claim 28 which depends from claim 27. Claim 27 has been amended to incorporate the subject matter of claims 28 and 29, and therefore believed to be in allowable condition. Claim 27 has been amended to recite the element "a Cu-Sn compound containing Cu_6Sn_5 " in a different order to more clearly recite the invention that is being claimed. Dependent claims 30-33 are believed to be allowable based on the allowability of claim 27. Claims 28 and 29 have been canceled without prejudice or disclaimer.

As to the rejection of claim 34, the claim has been amended to more clearly recite the features of the present invention so as to distinguish the cited art. Claim 34 recites that each junction includes a Cu-Sn compound and Cu balls. The Cu balls are bonded to other by the Cu-Sn compound.

It was alleged that Koning show Cu balls 124 which are bonded to each other by Cu-Sn compounds 116. Koning was further alleged to disclose that the Cu balls 124 may also be formed of a Cu-Sn alloy, and that Fig. 2 purportedly shows Cu-Sn bonding material formed at the peripheries of the Cu balls.

Applicant respectfully disagrees. According to Koning, reference numeral 124 refers to a coating, and more particularly the coating may be material oxides such as metal oxides, copper oxide, and the like. Koning does not describe 124 may be a formed of a Cu-Sn alloy.

Fig. 2 of Koning does not show that Cu-Sn bonding material is formed at the peripheries of the Cu balls. Fig. 2 is a cross-sectional view of an enlargement of inset 2 in a filled solder ball of Fig. 1. Fig. 2 shows that the coated fillers are dispersed in the solder ball 102.

Lino et al. only describe that the via-hole conductors contain a Cu-Sn intermetallic compound as an electrically conducting component. They do not describe bonding Cu Balls to each other by the use of a Cu-Sn compound.

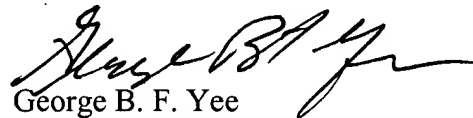
For at least the foregoing reasons, the Section 103 rejection of claim 34 is believed to be overcome.

CONCLUSION

In view of the foregoing, all claims now pending in this Application are believed to be in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,


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